

May 7, 2019

Ms. Kaitlin Urso
Colorado Department of Public Health and Environment
Air Pollution Control Division
APCD-SS-B1
4300 Cherry Creek Drive South
Denver, CO 80246-1530
303-692-3175
Via kaitlin.urso@state.co.us



RE: APEN GP-06 Permit Applications
Iron Mountain – Denver Data Center; Denver, CO

Dear Ms. Urso:

On behalf of Iron Mountain Data Centers, LLC, Michael Baker International (Michael Baker) is submitting the attached Air Pollutant Emission Notice (APEN) and Application for Construction Permit to the Colorado Department of Public Health and Environment (CDPHE) Air Pollution Control Division to authorize the installation of a new emergency generator (Emission Unit ID: A7) under the Diesel Reciprocating Internal Combustion Engines General Permit (GP06) at their facility located at 4300 Brighton Blvd., Denver, CO 80216.

Enclosed you will find the following application components:

- Project Narrative (with Description, Permit Applicability)
- Figures (Site Location Map, Building Drawing, and Gen-Set Detail Sheets)
- APEN 233 and APEN 214 for a new emergency generator (Emission Unit ID: A7)
- Emission Calculations
- Manufacturer Specifications
- APEN and General Permit Registration fees

The enclosed materials constitute all the necessary forms and additional information required of a complete application package as directed by CDPHE.

If you have any questions regarding this application or require any additional information, please feel free to contact me at (412) 269-6059 or via e-mail at holly.sarver@mbakerintl.com.

Sincerely,

MICHAEL BAKER INTERNATIONAL

Holly L. Sarver
Project Manager – Environmental

AIR QUALITY
Air Pollutant Emission Notice (APEN) and Application
for Construction Permit

Submitted to:



COLORADO
Department of Public
Health & Environment

Colorado Department of Public Health and Environment (CDPHE)
Air Pollution Control Division
Denver, Colorado

Prepared for:



IRON MOUNTAIN

Iron Mountain Data Centers, LLC
Iron Mountain – Denver Data Center
Denver, Colorado

Prepared by:

Michael Baker
INTERNATIONAL

Moon Township, Pennsylvania
May 2019

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SECTION 1

Project Narrative

PROJECT NARRATIVE

PROJECT DESCRIPTION AND PERMIT APPLICABILITY

Iron Mountain Data Centers, LLC located at 4300 Brighton Blvd., Denver, CO 80216 is submitting an Air Pollutant Emission Notice (APEN) and Application for Construction Permit to the Colorado Department of Public Health and Environment (CDPHE) Air Pollution Control Division under the existing Diesel Reciprocating Internal Combustion Engines General Permit (GP06) to request authorization of construction and operation of:

- One (1) new additional emergency generator (Emission Unit ID: A7) to be utilized for emergency purposes, preventative maintenance, or for demand response purposes.

The application presents the maximum capacity scenario showing potential to emit based on an emergency generator runtime of 500 hours per specific engine. While Iron Mountain exceeds exemption thresholds at the 500-hour scenario, it remains a synthetic minor source (below all Title V thresholds for all pollutants) when accepting a site-wide engine group cap of **100 hours per engine per 12-month rolling for each emergency generator at the facility.**

The new emergency generator (Emission Unit ID: A7) shall meet the EPA Tier 2 emission standards and comply with the New Source Performance Standards (NSPS) requirements of Colorado Air Quality Control Commission Regulation No. 6, Part A, Subpart III, Standards of Performance. No further minor New Source Review (NSR) discussion is applicable as the selected emergency generator meets presumptive Best Available Control Technology (BACT) of 6.0 gm/bhp-hr at the highest load. Please reference **Section 5: Manufacturer Specifications** for additional information on the emergency generator and documentation that this engine meets presumptive BACT (100% load = 4.19 gm/bhp-hr).

Anticipated GP06 conditions:

- Permittee shall limit total runtime from each facility emergency generator to 100 hours per engine per rolling 12-month total including the purposes of maintenance checks and readiness testing.
- The emergency generators shall not be used for peak shaving purposes or to otherwise supplement the primary power supply to the facility. The generators shall only be used for emergency purposes, to perform preventative maintenance, or for demand response purposes as authorized by 40 CFR 60.4211(f).
- Permittee shall record the 12-month rolling total emissions and hours of operation, fuel type and sulfur content of fuel.

PROJECT EMISSIONS

Emission calculations are provided in **Section 5: Emissions Calculations**. Table includes the emergency generator inputs and emission factors required to reproduce the calculations for criteria and hazardous air pollutant emissions.

The facility modification of the new emergency generator remains under New Source Review (NSR) thresholds for all pollutants. The modification does not result in a significant emission increase or a significant net emission increase for any pollutant. Thus, no further emission analysis is required.

Michael Baker

I N T E R N A T I O N A L

SECTION 2

Figures



SOURCE:
USGS, COMMERCE_CITY, 2016
GOOGLE EARTH, 5/31/18

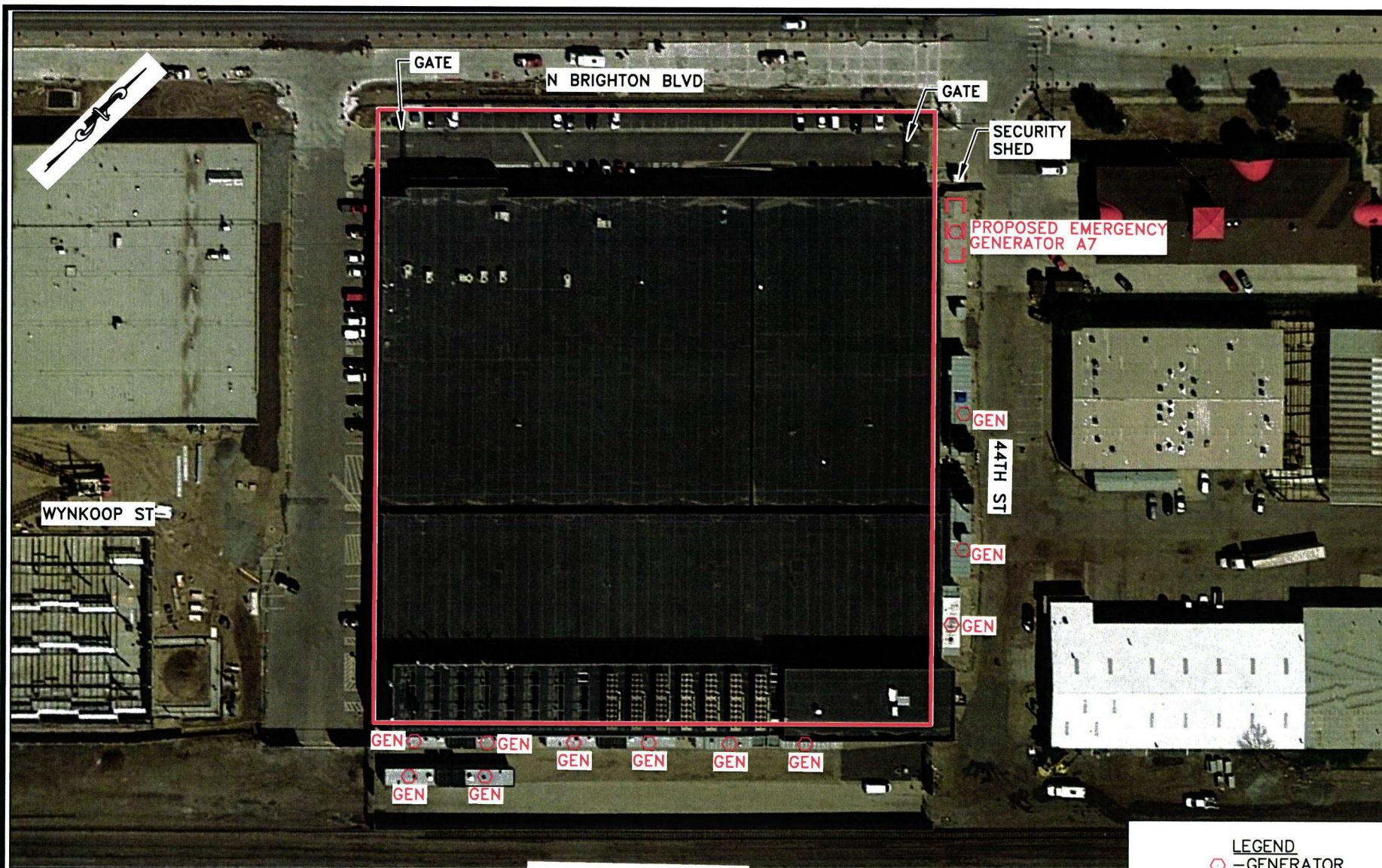
200 0 100 200
1 inch = 200 ft.

COLORADO
QUADRANGLE LOCATION

SCALE: 1"=200'
S.O. NO.: 170399
DSN/DWN: HS/RR
DATE:MAY 2019
FILE: 172115_IM_01
CHK: HS

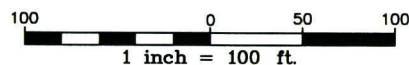
Michael Baker MICHAEL BAKER INTERNATIONAL
INTERNATIONAL MOON TOWNSHIP, PENNSYLVANIA

FIGURE 1
SITE LOCATION MAP
IRON MOUNTAIN DENVER FACILITY
4300 BRIGHTON BLVD
DENVER, COLORADO 80216



LEGEND
 ○ - GENERATOR

SOURCE:
 USGS, COMMERCE_CITY, 2016
 GOOGLE EARTH, 5/31/18



SCALE: 1"=100'
 S.O. NO.: 170399
 DSN/DWN: HS/RR

DATE: MAY 2019
 FILE: 172115_IM_02
 CHK: HS

Michael Baker MICHAEL BAKER INTERNATIONAL
 INTERNATIONAL MOON TOWNSHIP, PENNSYLVANIA

FIGURE 2
 FACILITY MAP
 IRON MOUNTAIN DENVER FACILITY
 4300 BRIGHTON BLVD
 DENVER, COLORADO 80216

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SECTION 3

Application Forms – Emission Unit ID A7

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I N T E R N A T I O N A L

SECTION 4

Emission Calculations

TABLE 1
Emergency Generator Emission Unit ID: A7
Emission Estimates

Make / Model	A7 - MTU / 20V4000G38 6TC EPA Tier 2 Certified				
Fuel	Diesel				
Power Output	4,036 bhp (mech.) kW (elec.)	500			
Input	137 MMBTU/Mgal				
Consumption	170.00 gal/hr	Hours/Year	Hours/Year		
Pollutant	Hourly Emissions	Maximum Annual	Actual Annual	EF Source	Emission Factor
NO _x	37.2379 lb/hr	9.31 tpy	0.0000 tpy	Vendor	4.19 gm/bhp-hr
CO	4.6771 lb/hr	1.17 tpy	0.0000 tpy	Vendor	0.53 gm/bhp-hr
VOC	0.0000 lb/hr	0.00 tpy	0.0000 tpy	Vendor	gm/bhp-hr
PM	0.4909 lb/hr	0.12 tpy	0.0000 tpy	Vendor	0.05522 gm/bhp-hr
PM ₁₀	0.4909 lb/hr	0.12 tpy	0.0000 tpy	Vendor	0.05522 gm/bhp-hr
PM _{2.5}	0.4909 lb/hr	0.12 tpy	0.0000 tpy	Vendor	0.05522 gm/bhp-hr
SO ₂	0.05 lb/hr	0.01 tpy	0.0000 tpy	AP-42 Table 3.4-1	1.21E-05 lb/bhp-hr
CO ₂	4,681.76 lb/hr	1170.44 tpy	0.00 tpy	AP-42 Table 3.4-1	1.16 lb/bhp-hr
CH ₄	0.15 lb/hr	0.04 tpy	0.00 tpy	40 CFR 98 Table C-2	3.00E-03 kg/MMBTU
N ₂ O	0.03 lb/hr	0.01 tpy	0.00 tpy	40 CFR 98 Table C-2	6.00E-04 kg/MMBTU
CO ₂ e	4,694.76 lb/hr	1173.69 tpy	0.00 tpy	40 CFR 98	(1*CO ₂)+(25*CH ₄)+(298*N ₂ O)
Total HAP	0.03 lb/hr	0.01 tpy	0.00E+00 tpy	AP-42	1.49E-03 lb/MMBTU
Acetaldehyde	5.87E-04 lb/hr	1.47E-04 tpy	0.00E+00 tpy	AP-42 Table 3.4-3	2.52E-05 lb/MMBTU
Acrolein	1.84E-04 lb/hr	4.59E-05 tpy	0.00E+00 tpy	AP-42 Table 3.4-3	7.88E-06 lb/MMBTU
Benzene	0.02 lb/hr	4.52E-03 tpy	0.00E+00 tpy	AP-42 Table 3.4-3	7.76E-04 lb/MMBTU
Formaldehyde	1.84E-03 lb/hr	4.59E-04 tpy	0.00E+00 tpy	AP-42 Table 3.4-3	7.89E-05 lb/MMBTU
Naphthalene	3.03E-03 lb/hr	7.57E-04 tpy	0.00E+00 tpy	AP-42 Table 3.4-4	1.30E-04 lb/MMBTU
Toluene	0.01 lb/hr	1.64E-03 tpy	0.00E+00 tpy	AP-42 Table 3.4-3	2.81E-04 lb/MMBTU
Xylene	4.49E-03 lb/hr	1.12E-03 tpy	0.00E+00 tpy	AP-42 Table 3.4-3	1.93E-04 lb/MMBTU

NOTES

Notes:

1. Power Output and Consumption provided by facility
2. Emission factors provided by Vendor specifications
3. 0.00809 lb SO₂/bhp-hr * 0.0015 S% in fuel.
4. New Source - Actual Hours To Be Determined - Left Blank of APEN

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I N T E R N A T I O N A L

SECTION 5

Manufacturer Specifications

BR4000 Genset-03 emission values at constant speed 1800 rpm EPA Tier 2

16V4000G43 3D, 16V4000G83 3B						
Emission	Unit	100%	75%	50%	25%	10%
		2280 kW	1710 kW	1140 kW	570 kW	228 kW
NOx	g/kWh	6,933	5,456	4,640	4,549	6,757
HC	g/kWh	0,134	0,170	0,236	0,494	0,554
CO	g/kWh	0,799	0,631	0,905	1,883	4,457
PM	g/kWh	0,074	0,114	0,182	0,427	0,680
Fuel		Diesel EN 590 or Certification fuel Y5Y complaint to CFR 40 Part 89				

Emission (Nominal)¹
EPA-2Emission (Nominal)¹
EPA-2

16V4000G43, 3B						
Emission	Unit	100%	75%	50%	25%	10%
		2020 kW	1515 kW	1010 kW	505 kW	202 kW
NOx	g/kWh	7,192	5,533	5,136	4,89	8,700
HC	g/kWh	0,164	0,199	0,291	0,641	2,173
CO	g/kWh	0,604	0,695	0,794	1,908	4,930
PM	g/kWh	0,086	0,115	0,198	0,383	0,385
Fuel		Diesel EN 590 or Certification fuel Y5Y complaint to CFR 40 Part 89				

Emission (Nominal)¹
EPA-2

20V4000G83L, 3D						
Emission	Unit	100%	75%	50%	25%	10%
		3490 kW	2618 kW	1745 kW	505 kW	349 kW
NOx	g/kWh	5,613	5,250	5,075	4,335	7,820
HC	g/kWh	0,112	0,180	0,237	0,486	1,589
CO	g/kWh	0,705	0,653	0,652	1,412	3,498
PM	g/kWh	0,074	0,099	0,164	0,293	0,374
Fuel		Diesel EN 590 or Certification fuel Y5Y complaint to CFR 40 Part 89				

Emission (Nominal)¹
EPA-2

20V4000G83 3D, 20V4000G83L 3B						
Emission	Unit	100%	75%	50%	25%	10%
		3010 kW	2258 kW	1505 kW	753 kW	301 kW
NOx	g/kWh	5,976	5,615	4,620	3,904	8,860
HC	g/kWh	0,166	0,190	0,261	0,511	1,830
CO	g/kWh	0,724	0,613	0,833	1,803	3,832
PM	g/kWh	0,079	0,088	0,141	0,291	0,364
Fuel		Diesel EN 590 or Certification fuel Y5Y complaint to CFR 40 Part 89				

¹ Emission data measurement procedures are consistent with those described in EPA CFR 40 Part 89, and ISO 8178-1 for measuring NOx, HC, CO and PM. Data shown is based on steady state operating conditions of 25 °C and 960 mbar and diesel as specified in the tables. The nominal emission data shown is subject to instrumentation, measurement, facility, and engine-to-engine variations. Field emission test data are not guaranteed to these values. Emission data cannot be used to compare to EPA regulations which use values based on weighted cycle.